Broad Agency Announcement
Inbound, Controlled, Air-Releasable, Unrecoverable Systems (ICARUS)
Microsystems Technology Office
DARPA-BAA-16-03
October 9, 2015

(Amendment No. 02: As amended through 30 November 2015)

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PART I: OVERVIEW INFORMATION

- **Federal Agency Name** – Defense Advanced Research Projects Agency (DARPA), Microsystems Technology Office (MTO)
- **Funding Opportunity Title –** Inbound, Controlled, Air-Releasable, Unrecoverable Systems (ICARUS)
- **Announcement Type –** Initial Announcement.
- **Funding Opportunity Number –** DARPA-BAA-16-03
- **Catalog of Federal Domestic Assistance Numbers (CFDA)** – Not applicable.
- **Dates**
  - Posting Date: 9 October 2015
  - Proposal Due Date: 2 December 2015
  - Estimated period of performance start: April 2016
- **Concise description of the funding opportunity:** DARPA seeks proposals for the design and prototyping of vanishing air delivery vehicles capable of precise, gentle drops of small payloads. These precision vehicles must be guaranteed to rapidly physically disappear following safe payload delivery. Proposed efforts must integrate engineered vanishing materials into advanced aerodynamic designs to produce an autonomously vanishing, field-testable prototype vehicle by the end of the two-year program.
- **Total amount of money available to be awarded:** It is anticipated that no more than $8M will be awarded.
- **Anticipated individual awards** – Multiple awards are anticipated.
- **Anticipated funding type** - 6.2 or 6.3
- **Types of instruments that may be awarded** – Procurement contract or other transaction.
- **Any cost sharing requirements –** None.
- **Agency contact**
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PROPOSERS ARE CAUTIONED THAT EVALUATION RATINGS MAY BE LOWERED AND/OR PROPOSALS REJECTED IF PROPOSAL PREPARATION (PROPOSAL FORMAT, CONTENT, ETC.) AND/OR SUBMITTAL INSTRUCTIONS ARE NOT FOLLOWED.

PART II: FULL TEXT OF ANNOUNCEMENT

I. Funding Opportunity Description

The Defense Advanced Research Projects Agency often selects its research efforts through the Broad Agency Announcement (BAA) process. This BAA is being issued, and any resultant selection will be made, using procedures under Federal Acquisition Regulation (FAR) 35.016. Any negotiations and/or awards will use procedures under FAR 15.4, Contract Pricing, as specified in the BAA. Proposals received as a result of this BAA shall be evaluated in accordance with evaluation criteria specified herein through a scientific review process.

DARPA BAAs are posted on the Federal Business Opportunities (FedBizOpps) website, http://www.fbo.gov/. The following information is for those wishing to respond to the BAA.

Precise air delivery to resupply operators or humanitarian teams on the ground requires disposable, low-cost, systems capable of carrying small payloads. This capability does not currently exist as the state-of-the-art systems are expensive (UAVs) or require pack-out of the system by the recipients (parachute-based systems). To resolve this capability gap for the nation, DARPA seeks innovative research proposals in the area of vanishing, precision air delivery vehicles capable of carrying small (up to ~3 lbs.) payloads. These systems should be capable of release from high altitude and must vanish while safely delivering their payload. Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice.

Introduction:
Supply and re-supply of small military and civilian teams in difficult to access territory currently requires the use of large, parachute-based delivery systems that must be packed-out after receipt of the payload both for operational security and environmental concerns. Small items including additional batteries, communications devices, or medical supplies – especially those requiring cold storage – could be supplied/resupplied using low-cost, disposable aircraft to sniper or Special Forces teams operating in difficult to access areas. These small teams aggressively minimize their loads and carry only the most critical supplies. Often extenuating circumstances warrants emergency supply such as critical combat casualty care in remote locations where medical evacuation is delayed. Even the availability of a small, 10 lbs. ventilator could significantly improve critical care outcomes downrange. The medical supply problem can be especially problematic in humanitarian assistance and disaster relief (HADR) missions where the storage requirements of insulin, anti-venom treatments, and blood/plasma products limit their availability in remote locations or infrastructure-poor regions. For operators and even HADR personnel, delivery vehicles that do not require pack-out can simplify their operations and limit the environmental impact of a widespread response. Finally, operators in hostile territories require protection of their team's location. As such, maintaining operational security forbids leaving behind supply vehicles. Weighed against the load concerns of pack-out this presents a logistical conundrum.

A critical capability gap exists in eliminating the leave-behind of air vehicles used to deliver supplies to personnel on the ground without requiring pack-out. Such pack-out of these systems is cumbersome, time-consuming, and adds significant weight to the individuals' loads. DARPA is seeking to develop autonomous, precision, air delivery vehicles that both safely deliver their package(s) and physically vanish, *i.e.* the vehicle's physical disappearance is part of its mission specification. Such a system would enable efficient resupply to teams in distributed locations, eliminate the need to repack/pack-out delivery parachutes resupplying small operating forces downrange, and create a capability to safely, and without detritus, deliver time-critical humanitarian supplies (*e.g.* food, perishable medical supplies) to civilian/NGO personnel serving in remote or dangerous areas.

The Inbound, Controlled, Air-Releasable, Unrecoverable Systems program (ICARUS) aims to develop a core capability to fill this gap for the DoD and nation through the development of vanishing, precision, air delivery vehicles for small (< 3 lb.) packages. These systems should:

1) Fully vanish within four hours of payload delivery or within 30 minutes of morning civil twilight (assuming a night drop), whichever is earlier.
2) Precisely drop an up to 3 lb. payload within 10 m of the target landing spot programmed prior to air release.
3) Exert < 100 G (1 ms peak, half sine wave) on the payload throughout its delivery.
4) Cover a lateral distance of > 150 km when released from a stationary balloon at 35,000 feet.
5) Span fewer than 3 m in its longest dimension.

No system currently exists that fulfills the complete specifications described above. State-of-the-art precision delivery using Tandem Offset Resupply Delivery Systems (TORDS), Joint Precision Airdrop Systems (JPADS), or civilian quadcopters or unmanned aerial vehicles (UAVs) typically require complex materials and/or controllers to meet the aerodynamic requirements, but simply cannot vanish. Furthermore, precision notwithstanding, no air delivery vehicles have been fielded with a disappearing or transience capability. Recent advances produced in both DARPA's Vanishing, Programmable Resources (VAPR) program and in the wider materials science literature indicate the potential for triggered, transient structural materials that may be applied to the aeronautics problem posed herein. DARPA defines transience as full and complete physical disappearance (to the naked eye) of a complete system and its constituent materials – independent of the surrounding environment. As such, any remnants must be < 100 μm on the longest dimension. Implementation of the transient materials in the VAPR program has advanced the transience characteristics (*e.g.*, rate, triggering) while simultaneously improving the structural properties (*e.g.*, Young's modulus) for their application to various types of electronic packaging and substrates. The VAPR program has partially de-risked the main materials tradeoffs between transience rate, stability and modulus. Further innovations in materials engineering, subsequent materials scale-up, and incorporation into a high-precision aerodynamic design will require cohesive, multidisciplinary teams working in a well-integrated fashion to produce a working design and fabricate a field-testable prototype.

DARPA is interested in the fundamental question of whether a large, functional structure can be made transient. This will have impact in many different core areas where a leave behind will have

environmental and/or unintended logistical consequence. There is a potential future where systems can be made cheap enough to be disposable limiting the logistics trail, and maximizing range for a given flight system.

Program Objective:
ICARUS seeks to design, prototype, and demonstrate an autonomous, guided, precision, vanishing air delivery vehicle capable of delivering a small package (up to 3 lbs.) to a GPS-programmed location (10 m accuracy). Following a night drop, the air delivery vehicle must completely, physically disappear within 4 hours of payload delivery or within 30 minutes after morning civil twilight, whichever is earlier. To be considered not visible to the naked eye, DARPA nominally quantifies physical disappearance, or transience, as producing remnants not exceeding 100 µm on the longest dimension. Preferably, the orientation of the payload with respect to the ground will be maintained after delivery (*i.e*. the payload will be delivered right side up). Since transient electronic microsystems are currently under development in the VAPR program, this BAA allows for the proposed vehicles to carry a guidance/control system exempt from the transience requirements provided it is housed in a package no larger than a tennis ball (max. volume 146 cm^3) with a maximum ellipsoidal aspect ratio of 3:1. Any components of the vehicle existing outside of the tennis ball package must be transient. Camouflaging schemes, removal or departure of the vehicle, and other approaches that would be described as "technically disappeared" are not of interest to DARPA and are considered non-responsive. Delivery vehicles may land with the payload at the landing zone (LZ) or proceed to a different location after safely dropping the payload. In both cases, the vehicle must be completely transient. Multi-stage implementations (analogous to multi-stage rockets) are within scope, again provided all stages are fully transient regardless of whether initial stages land at a distance from the payload LZ. Simply put, if the proposed delivery system does not fully vanish it will be deemed non-responsive – transience is the highest priority design requirement. Prototypes developed under ICARUS must be field-testable in the specified environmental conditions by program end. As such, while ICARUS will include some limited fundamental research, the program's overall objective is to demonstrate a field-testable prototype by the end of its second year and is not considered a fundamental research program.

Critical technical challenges facing the ICARUS program cover two major categories: aerodynamics and materials. Aerodynamic design considerations and the materials engineering capabilities will affect one another and their close interplay will necessitate compromises to overcome trade-offs and achieve final program objectives. Example challenges likely to affect vehicle design include, but are not limited to:

a) Maintaining vehicle rigidity and mass for range and control, while limiting the overall mass of materials that must disappear.
b) Meeting precision requirements without exerting excessive landing forces on the payload.
c) Engineering reliable triggers, fail-sure mechanisms, and transience rates to meet the 100% vanishing requirement.
d) Meeting the flight specifications using guaranteed-to-vanish materials resilient to wide temperature ranges and harsh conditions (*e.g.*, ice formation) and other highly variable environmental conditions during flight. (Stable materials that are engineered to be very unstable, but only when triggered)

e) Scaling up transient materials and exploiting existing, manufacturing-scale fabrication processes (including, but not limited to, state-of-the-art scalable additive or subtractive manufacturing or molding approaches.)

Proposals should detail the technical risks relevant to the proposed technical approach along with the attendant risk mitigation strategies.

The ICARUS program will span two phases and a total of 26 months culminating in a final, Government field-test of fully vanishing, precision air delivery prototypes. Phase I will develop and demonstrate an air delivery vehicle meeting the final program metrics, but realized using non-transient materials proxies that are similar in mechanical and other properties to the proposed transient materials. Performers will also have to demonstrate the ability to fabricate required vehicle components in a manufacturing process using the transient materials in Phase I. Phase II will leverage the Phase I demonstrations to fabricate a final, field testable, vanishing air delivery vehicle meeting the final program goals.

Technical Areas:
ICARUS is divided into two separate technical areas, aerodynamic design and transient materials. All proposals must be comprehensive *and* integrated responses to both technical areas.

Technical Area 1: Aerodynamic Design and Control
Aerodynamics, control, and actuation design should meet the range and precision requirements set forth in this BAA along with the payload size/shape and release and landing zone conditions. These requirements are detailed in Table 1. The control and guidance systems may be housed within the non-transient tennis ball package, however some or all of the actuators required for steering the vehicle will likely reside outside of the avionics package and are therefore subject to the transience requirements. While DARPA is agnostic to the type of design, systems requiring a motor are unlikely to be responsive to the transience requirements. Potential strategies may include, but are not limited to, gliders, parafoils, or some combination thereof.

Guidance, control, and navigation strategies designed to achieve program goals should be described clearly and, where possible, supported by preliminary data or numerical modeling. Practical considerations such as the designed control system's resilience in widely disparate thermal conditions or the stability of the system's calibration should be included as well. Proposals must also include quantitative rationale for the vehicle design decisions, including a description of the commercial-off-the-shelf (COTS) electronics likely to be integrated in the avionics package. Should the proposing teams possess proprietary components or control packages developed through internal R&D or similar development pipelines that are necessary for the proposed technical approach, these may be included in the proposed implementation. Critically, the proposal should clarify the limitations of state-of-the-art COTS components and must include a plan for technology transfer and other issues affecting Government-use of any non-COTS components. Finally, system-level considerations such as power (size, weight, and power – SWAP) requirements and resilience in non-specified flight conditions (*e.g.*, chaotic air turbulence at high altitude and wind gusts at the LZ) also require discussion in the proposal.

Regardless of vehicle design, all proposed approaches must justify the selected non-transient material proxies that will support the early feasibility testing of the aerodynamics and control in Phase I, and the relevant fabrication techniques for achieving the proposed final Phase I and Phase II flight vehicles.

Technical Area 2: Transient Materials

Performance in this technical area must address three major aspects of the problem.

1) Design and engineering of transient materials and their triggers
2) Scale-up of transient materials to the kg-scale to produce sufficient material for experimentation and final design
3) Fabrication approaches and process design to incorporate the novel transient materials into a reliable, scalable manufacturing process

Proposed efforts must address the critical materials properties required for integration into the transient vehicle – specifically the transience rate, triggering mechanism, material stability and the structural characteristics. Proposal should detail both the structural characteristics (*e.g.*, Young's modulus, ultimate tensile strength, shear strength, *etc.*) required by the specific aeronautical design and the path to achieving these structural characteristic in the proposed transient materials. Advancement beyond the state-of-the-art in transient structural materials is expected in order to adequately respond to the full needs of this BAA. Transience mechanisms producing visible residues, damage to the local environment or handlers (*e.g.* strong acids), requiring energetic materials (*e.g.* nitrocellulose, metal oxides), or perceptible visual or acoustic signatures (*e.g.* fire, explosions) are not of interest to DARPA and are non-responsive to this BAA.

Achieving appropriate transience rates without degrading the structural properties may pose a significant technical challenge when engineering existing transient materials, for example sublimating polymers. Tailoring the intrinsic properties of the materials (*e.g.* thermodynamic instability of the monomer) *vs.* extrinsic engineering (*e.g.* packaging and homogeneous incorporation of transience-inducing agents) represent two *examples* of acceptable, and not mutually exclusive, paths to accelerating transience. Note: These examples are included solely to illustrate the concept. DARPA is agnostic to the technical approach provided it meets the program metrics.

DARPA *strongly prefers* mechanisms comprised of at least one triggered mode combined with a secondary "fail-sure" mode dependent on a reliable environmental condition (*e.g.* sunlight or impact). In all cases, DARPA requires autonomous transience. Solutions where the vanishing is triggered remotely *via* a radio frequency, optical, or other communications channel are considered non-responsive. Proposers must demonstrate the proposed approach can guarantee complete transience.

Initial proof-of-concept designs of the structural materials are expected to occur at very small scales (*i.e.* < 1 gram), but the aggressive program schedule requires that these materials rapidly meet the scale-up needs for fabrication and prototyping of the full-scale vehicle design. The manufacturing considerations are two-fold: 1) transient materials scale-up and production at the kilogram-scale and 2) vehicle fabrication and manufacturing approaches capable of supporting the transient materials. As such, proposed program plans should address both of these manufacturing

issues in parallel with the core transient materials optimization. Careful selection of the proxy materials for the Phase I aerodynamic feasibility demonstrations may address and mitigate some of the manufacturing technical challenges and risks. Proposers may also provide early short-loop experiments to demonstrate feasibility of the intended manufacturing techniques.

Proposals should detail the full operational scenario from the moment of vehicle delivery through the transience process at the landing zone (or beyond, if applicable). The operational scenarios should also include detail regarding shelf life, storage, and handling considerations. Proposals should also include a discussion on whether and how the proposed vehicle may be deployed from various other air platforms, not just stationary, high-altitude balloons. Of particular interest are releasing from aircraft traveling at high speeds and high altitude. Proposers should include the performance limits of the proposed vehicles such as anticipated maximum drop airspeed, maximum altitude, minimum operating temperature, maximum payload, and any modifications that might be required to drop the vehicle at airspeeds exceeding the anticipated maximum drop airspeed.

Program Plan and Technical Milestones:
Efforts in the ICARUS program will span two phases (Phase I: 14 months, Phase II: 12 months) culminating in a final, Government field-test of fully transient, precision air delivery prototypes. All proposals must include comprehensive budget responses to both Phases. Phase II should be proposed as an Option.

Phase I will develop and demonstrate an air delivery vehicle meeting the final program metrics, but realized using non-transient materials. The non-transient materials used for the Phase I air delivery vehicle must be similar in mechanical and other properties to serve as a reasonable substitute for the proposed transient material solution. Special care should be taken to justify the choice of the non-transient Phase I materials. Phase I also includes a transient, critical component(s) demonstration to establish that the transient materials can be used in a legitimate manufacturing process. The component(s) demonstrated must be selected to provide a compelling demonstration of the manufacturability of the transient material(s) required for the final transient vehicle. Proposers requiring integration of disparate transient materials in the final design should plan to demonstrate a range of components for comprehensiveness.

Phase II will combine the Phase I components to form a final, field testable, vanishing air delivery vehicle meeting the final program goals. This technology development plan is notionally mapped below in Figure 1.

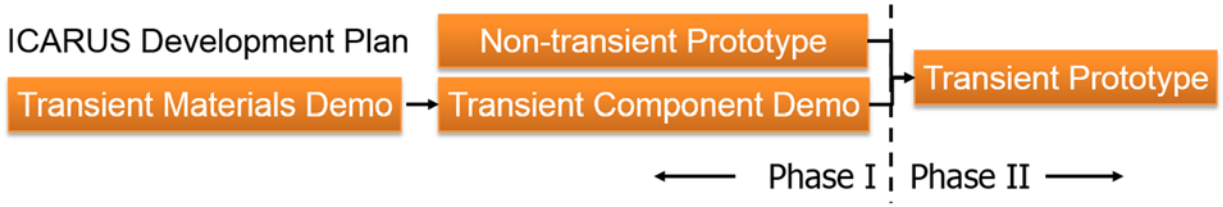

Figure 1 - ICARUS Notional Technology Development Plan

Intermediate and end-of-phase milestones must demonstrate forward progress towards both the aerodynamics solution and the materials solution. Proposed program timelines must clearly

demarcate the process for integrating the transient materials developed in Phase I into the final vehicle design. Incorporation of transient materials into the final design may occur earlier than the delineated program plan visualized in Figure 2. Proposed efforts must detail their responsiveness to the DARPA-defined test conditions for both the Phase I and Phase II final demonstrations, and also include a narrative discussing the range of conditions the described approach addresses beyond the DARPA-defined test plan. The trigger/fail-sure design must be rationalized in all proposed use scenarios.

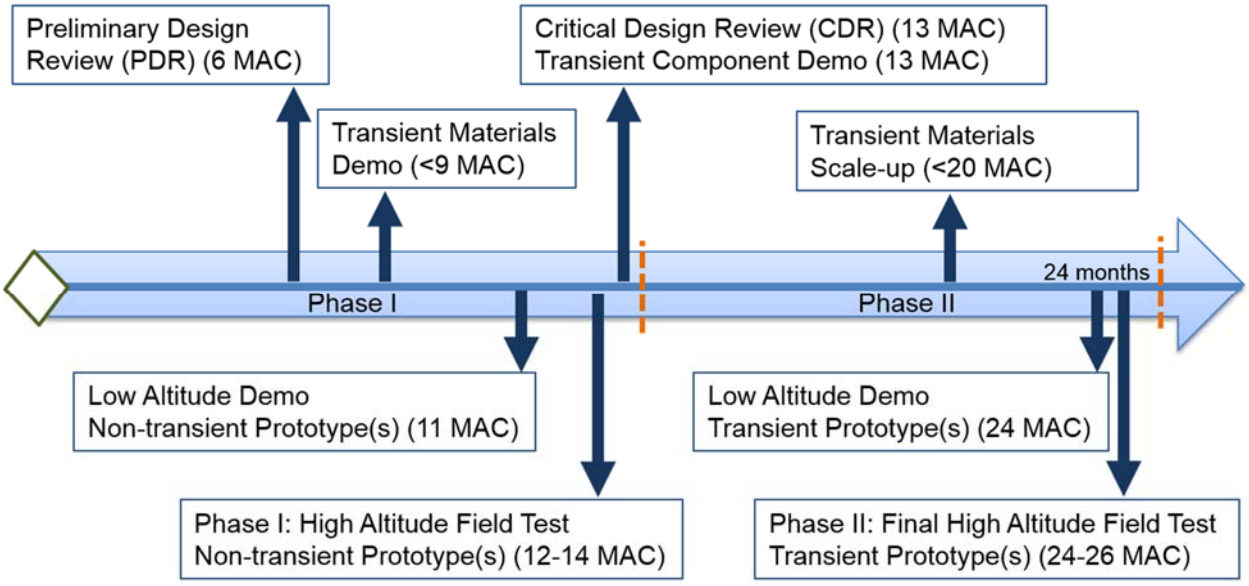

Figure 2 – ICARUS Program Plan and Schedule Delineated by Milestone

DARPA-defined intermediate milestones are designed to demonstrate the performers are de-risking critical technical challenges associated with integration of a final field-testable system. Proposers must define additional intermediate milestones minimally every six (6) months throughout the effort to track progress.

Field Test, Specifications, and Metrics

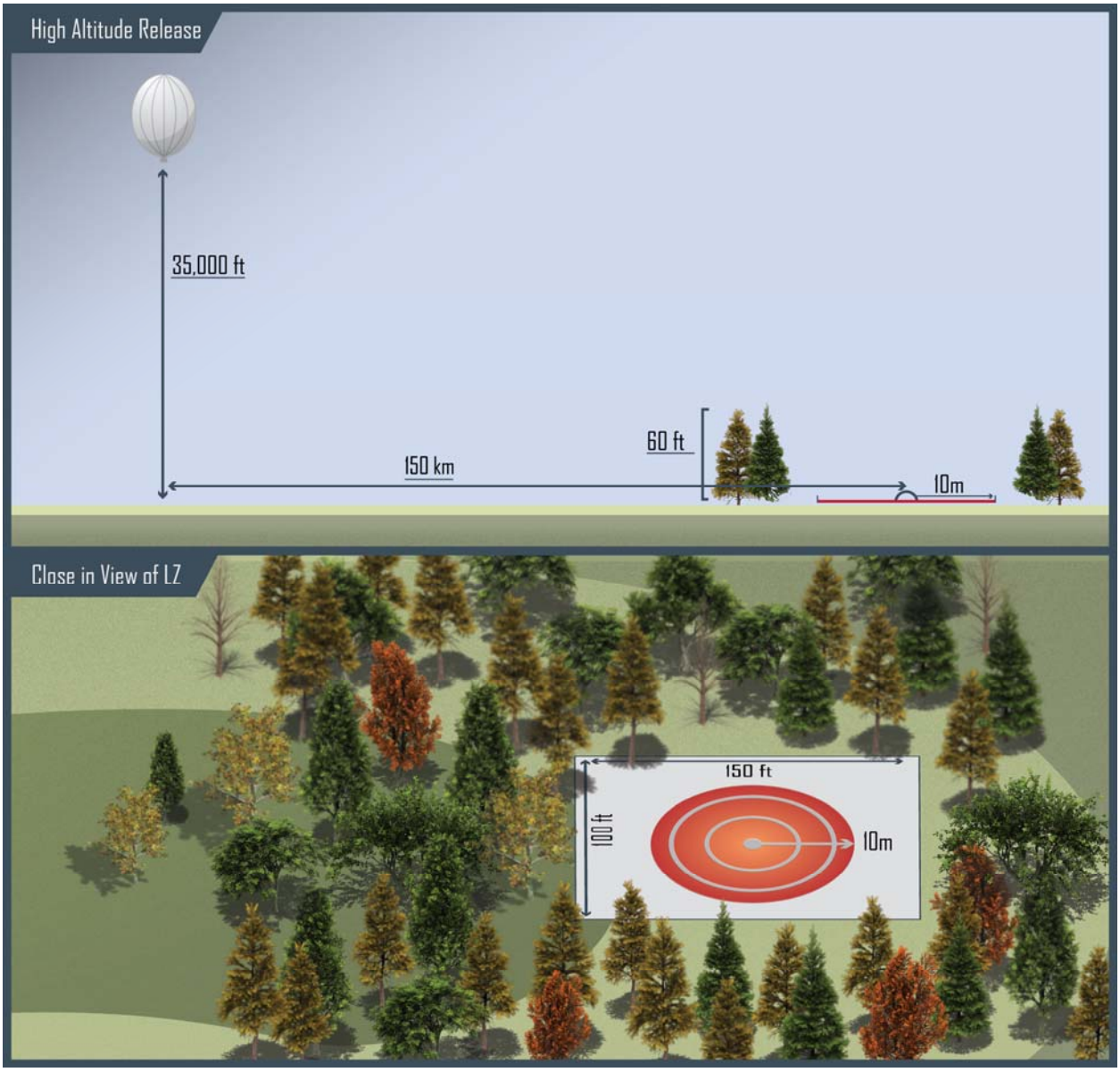

Figure 3 - Diagram of launch and landing zone

For this exercise, assume that wind direction at drop will not be a headwind, *i.e.* the drop will occur upwind of the landing zone (Figure 3). The following table defines the launch conditions, landing conditions, payload characteristics, avionic package specifications, and performance metrics for the Government-executed field tests (Table 1).

Table 1

Launch conditions	**Landing Zone Conditions**
Average Temperature (°C): -54	Average Temperature (°C): 16
Temperature Range (°C): -58 to -46	Temperature Range (°C): -4 to 36
Average Wind Speed (mph): 55	Average Wind Speed (mph): 17
Wind Speed Range (mph): 13 to 123	Average Wind Gust (mph): 24
Average Humidity (%): 28	Average Humidity (%): 42
Humidity Range (%): 2 to 64	Humidity Range (%): 5 to 97
Average Dewpoint (°C): -66	Latitude: 40°N
Dewpoint Range (°C): -76 to -59	Morning Civil Twilight/Sunrise: 05:39/06:10
Altitude: 35,000 ft MSL	
Airspeed: 0 mph	Clearing Dimensions: 100 ft x 150 ft
Offset: > 150 km lateral	Max. surrounding tree height: 60 ft

Payload Characteristics					
Note: Proposed systems must support all four payload types and form factors.					
Form Factor (COTS)	Water-filled, 1.5L bottle (Nalgene™ Silo 1.5L)	Battery (BA-5590)	Shock Sensor (Shock101, MadgeTech)[#]	Field blood transfusion kit (Chinook TMM-FBT-SOF)	
Dimensions (per unit)	H: 11.25”, Diameter: 3.63”	W: 2.45” H: 4.4” D: 5”	W: 3.5” H: 4.4” D: 1.0”	W: 14" H: 9" D: 2" unfolded	W: 7" H: 9" D: 4" folded
Weight/unit	3 lbs.	1 kg	12 oz.[+]	14.64 oz. [+]	

[#] Used to measure shock experienced by the payload.
[+] Weight may be added to carry smaller payloads provided the extra weight also vanishes.

Avionics Package (exempt from transience requirements)
GPS , IMU, and wind speed sensors allowed
Package: < 146 cm^3 volume (tennis ball-sized)
Aspect ratio: max. 3:1 (ellipsoid)

Metrics
Transience completion: The earlier of either landing + 4 hrs. or morning civil twilight + 30 min.
Remnants: < 100 um on the longest dimension
Range: > 150 km
Precision: < 10 m from GPS-defined target
Force tolerance: 100 G max. (1 ms peak, half sine wave)
Maximum vehicle dimension: 3 m

Metrics defined in Table I represent the baseline expectations of the proposed vehicle. Proposers may define their own metrics provided they outperform those outlined above.

Milestones, Deliverables, End-of-Phase DARPA Challenges:
Phase I: 1-14 Months after contract (MAC)

a) Preliminary Design Review (PDR) (Proposer defined – no later than (NLT) 6 Months After Contract (MAC)
Milestone: Design review demonstrating that the proposed design will meet intended aerodynamic and precision performance requirements. All system requirements and specifications must be completed. Include design verification and detailed plan for advancing to final prototype fabrication. Identify technical risks and detail mitigation strategies to complete Phase I.

Deliverable: Briefing to DARPA PM to include

1. Aerodynamic design – aircraft body geometry, weight, glide ratio, material(s) structural requirements (modulus, tensile strength, *etc*.), operating environment
2. Controller design – components, COTS parts, size, weight, and power (SWAP)
3. Actuator design – components, geometry, materials and materials structural requirements
4. Fabrication plan – outline and detailed path
5. Supporting theoretical calculations or simulations demonstrating that the PDR design is likely to meet the program requirements.

b) Transient materials design and demonstration (Proposer defined – NLT 9 MAC)
Milestone: Demonstration of the transient materials required for implementing the PDR design. Synthesize gram-scale quantities of the transient materials drop-ins to replace the non-transient proxy materials. These transient materials must meet all transience requirements scaled to the volumes relevant to the vehicle design. *i.e.*, rates of transience must fulfill the final transience time requirements for the full-scale prototype. Transient materials must also meet the structural and stability properties required by the final vanishing delivery vehicle. Each transient material proposed for the final vanishing air delivery vehicle must be demonstrated for this milestone.

Deliverable: 10 g of demonstrated transient materials samples (any form factor) for independent verification and validation (IV&V) by DoD partner

c) Full-scale, non-transient, low-altitude tested prototype (11 MAC)
Milestone: Non-transient prototype meets range (min. 11.5 km) and precision targeting (max. 10 m to target) metrics by low altitude test (minimal conditions: 2000 ft. drop altitude, 0 mph drop airspeed).

Deliverable(s): 1) Three (3) prototype air delivery vehicles comprised of a limited set of non-transient materials meeting all the precision requirements and field ready for high-altitude testing. 2) Documentation of shock data logged throughout the delivery using an

appropriate COTS shock logging device, *e.g.*, a device carried as one of the four required test payloads for the prototyped system.

d) Phase I Challenge: DARPA high altitude delivery (12-14 MAC)
Milestone: Support Government field-test of full-scale, non-transient, prototypes.
   1. The Government will perform the final Phase I high altitude field test
   2. Conditions: Drop altitude: 35,000 ft., MSL Drop airspeed: 0 mph
   3. Metrics: 10 m precision, 150 km lateral range, 100 G max. throughout delivery

e) Transient Component Demonstration (13 MAC)
Milestone: Critical vehicle component prototypes meet transience rate requirements, mechanical properties, and demonstrate the anticipated manufacturing process(es) required for the Phase II transient air delivery vehicle fabrication. Performers should justify their choice of critical component(s) selected for transient demonstration based on the design established in the PDR. Performers will need to demonstrate a single component made from each transient material proposed in the PDR design.

Deliverable(s): A proposer-defined number of components prototyped using transient materials. Report detailing the fabrication process, aerodynamic characteristics, and transience performance of the fabricated transient components.

f) Critical Design Review (CDR) (13 MAC)
Milestone: Show that the design can proceed towards full-scale fabrication of vehicles implemented with transient materials. Integration of transient materials, non-transient avionics package, and vehicle fabrication must be detailed to show feasibility of the process and design must meet the complete performance requirements for the Phase II final field test.

Deliverable(s): Briefing to DARPA PM to include
   1. Details of non-transient prototype low and high altitude performance
   2. Detailed analysis of Phase II transient prototype design's predicted performance justified by measured performance of the Phase 1 non-transient prototypes and scaling based on any differences in materials properties between the transient and non-transient materials.
   3. Detailed manufacturing plan for the transient airborne delivery vehicles
   4. Storage and shelf-life requirements
   5. Operating procedures for user handling at and before deployment

Phase II: 14 – 26 MAC

a) Transient materials demonstration (Proposer-defined – NLT 20 MAC)
Milestone: Demonstrate ability to synthesize kg-scale quantities of the transient materials needed for the final vanishing airborne delivery vehicle. These transient materials must

meet all transience and structural requirements scaled to the volumes relevant to the vehicle design, i.e. rates of transience must meet the final transience time requirements.

Deliverable: 10 g of samples derived from a kg production batch (any form factor) for IV&V by DoD partner

b) Full-scale, transient, low-altitude tested prototype (24 MAC)
Milestone: Transient prototype meets range (min. 11.5 km), precision targeting (max. 10m to target), and maximum acceleration/deceleration metrics by low altitude test (minimal conditions: 2000 ft. drop altitude, 0 mph drop airspeed).

Deliverable(s): 1) Three (3) prototype air delivery vehicles comprised of transient materials meeting all the precision requirements and field ready for high-altitude testing. 2) Documentation and supporting materials demonstrating low altitude-tested, fully transient, prototype air delivery vehicles. Shock data logged throughout the delivery must be documented using an appropriate COTS shock logging device, *e.g.*, a device carried as one of the four required test payloads for the prototyped system.

c) Phase II Challenge: DARPA high altitude delivery (24-26 MAC)
Milestone: Support Government field-test of full-scale, transient, prototypes.
   a. The Government will perform final Phase II high altitude field test
   b. Conditions: Drop altitude: 35,000 ft. MSL, Drop airspeed: 0 mph
   c. Metrics: 10 m precision, 150 km lateral range, 100 G (1 ms, half sine) max. throughout delivery

Given the aggressive 26 month timeline, the need for multiple, manufactured prototypes delivered at the end of each phase and the challenging field test conditions, teams must be led by organizations/PI capable of integrating and managing the multiple required technologies. A demonstrated track record of systems design and integration along with small-scale fabrication processes will be well received.

II. Award Information

Multiple awards are anticipated. The amount of resources made available under this BAA will depend on the quality of the proposals received and the availability of funds.

The Government reserves the right to select for negotiation all, some, one, or none of the proposals received in response to this solicitation, and to make awards without discussions with proposers. The Government also reserves the right to conduct discussions if it is later determined to be necessary. If warranted, portions of resulting awards may be segregated into pre-priced options. Additionally, DARPA reserves the right to accept proposals in their entirety or to select only portions of proposals for award. In the event that DARPA desires to award only portions of a proposal, negotiations may be opened with that proposer. The Government reserves the right to fund proposals in phases with options for continued work at the end of one or more of the phases.

Awards under this BAA will be made to proposers on the basis of the evaluation criteria listed below (see section labeled "Application Review Information," Sec. V.), and program balance to provide overall value to the Government. The Government reserves the right to request any additional, necessary documentation once it makes the award instrument determination. Such additional information may include but is not limited to Representations and Certifications. The Government reserves the right to remove proposers from award consideration should the parties fail to reach agreement on award terms, conditions and cost/price within a reasonable time or the proposer fails to timely provide requested additional information. Proposals identified for negotiation may result in a procurement contract or other transaction, depending upon the nature of the work proposed, the required degree of interaction between parties, whether or not the research is classified as Fundamental Research, and other factors.

In all cases, the Government contracting officer shall have sole discretion to select award instrument type and to negotiate all instrument terms and conditions with selectees. Proposers are advised that regardless of the instrument type proposed, DARPA may select other award instruments, as it deems appropriate. DARPA will apply publication or other restrictions, as necessary, if it determines that the research resulting from the proposed effort will present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Any award resulting from such a determination will include a requirement for DARPA permission before publishing any information or results on the program. For more information on publication restrictions, see the section below on Fundamental Research.

Fundamental Research

It is DoD policy that the publication of products of fundamental research will remain unrestricted to the maximum extent possible. National Security Decision Directive (NSDD) 189 established the national policy for controlling the flow of scientific, technical, and engineering information produced in federally funded fundamental research at colleges, universities, and laboratories. The Directive defines fundamental research as follows:

> 'Fundamental research' means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons.

As of the date of publication of this BAA, the Government expects that program goals as described herein either cannot be met by proposers intending to perform fundamental research or the proposed research is anticipated to present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Therefore, the Government anticipates restrictions on the resultant research that will require the contractor to seek DARPA permission before publishing any information or results relative to the program.

Proposers should indicate in their proposal whether they believe the scope of the research included in their proposal is fundamental or not. While proposers should clearly explain the intended results of their research, the Government shall have sole discretion to select award instrument type and to negotiate all instrument terms and conditions with selectees. Appropriate clauses will be included in resultant awards for non-fundamental research to prescribe publication requirements and other restrictions, as appropriate.

For certain research projects, it may be possible that although the research being performed by the prime contractor is restricted research, a subawardee may be conducting fundamental research. In those cases, it is the prime contractor's responsibility to explain in its proposal why its subawardee's effort is fundamental research.

The following statement or similar provision will be incorporated into any resultant non-fundamental research procurement contract or other transaction:

> There shall be no dissemination or publication, except within and between the contractor and any subawardees, of information developed under this contract or contained in the reports to be furnished pursuant to this contract without prior written approval of DARPA's Public Release Center (DARPA/PRC). All technical reports will be given proper review by appropriate authority to determine which Distribution Statement is to be applied prior to the initial distribution of these reports by the contractor. With regard to subawardee proposals for Fundamental Research, papers resulting from unclassified fundamental research are exempt from prepublication controls and this review requirement, pursuant to DoD Instruction 5230.27 dated October 6, 1987.
>
> When submitting material for written approval for open publication, the contractor/awardee must submit a request for public release to the DARPA/PRC and include the following information: (1) Document Information: document title, document author, short plain-language description of technology discussed in the material (approx. 30 words), number of pages (or minutes of video) and document type (e.g., briefing, report, abstract, article, or paper); (2) Event Information: event type (conference, principal investigator meeting, article or paper), event date, desired date for DARPA's approval; (3) DARPA Sponsor: DARPA Program Manager, DARPA office, and contract number; and (4) Contractor/Awardee's Information: POC name, email and phone. Allow four weeks for processing; due dates under four weeks require a justification. Unusual electronic file formats may require additional processing time. Requests may be sent either via email to public_release_center@darpa.mil or by mail at 675 North Randolph Street, Arlington VA 22203-2114, telephone (571) 218-4235. Refer to the following for link for information about DARPA's public release process: http://www.darpa.mil/work-with-us/contract-management/public-release."

III. Eligibility Information

All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA.

A. Eligible Applicants

Federally Funded Research and Development Centers (FFRDCs) and Government entities (e.g., Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations and cannot propose to this BAA in any capacity unless they meet the following conditions: (1) FFRDCs must clearly demonstrate that the proposed work is not otherwise available from the private sector; and (2) FFRDCs must provide a letter on official letterhead from their sponsoring organization citing the specific authority establishing their eligibility to propose to Government solicitations and compete with industry, and their compliance with the associated FFRDC sponsor agreement's terms and conditions. This information is required for FFRDCs proposing to be prime contractors or subawardees. Government entities must clearly demonstrate that the work is not otherwise available from the private sector and provide written documentation citing the specific statutory authority and contractual authority, if relevant, establishing their ability to propose to Government solicitations. At the present time, DARPA does not consider 15 U.S.C. § 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C.§ 2539b may be the appropriate statutory starting point for some entities, specific supporting regulatory guidance, together with evidence of agency approval, will still be required to fully establish eligibility. DARPA will consider FFRDC and Government entity eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the proposer.

Non-U.S. organizations and/or individuals may participate to the extent that such participants comply with any necessary nondisclosure agreements, security regulations, export control laws, and other governing statutes applicable under the circumstances.

B. Procurement Integrity, Standards of Conduct, Ethical Considerations, and Organizational Conflicts of Interest

Current federal employees are prohibited from participating in particular matters involving conflicting financial, employment, and representational interests (18 U.S.C. §§ 203, 205, and 208). Once the proposals have been received, and prior to the start of proposal evaluations, the Government will assess potential conflicts of interest and will promptly notify the proposer if any appear to exist. The Government assessment does NOT affect, offset, or mitigate the proposer's responsibility to give full notice and planned mitigation for all potential organizational conflicts, as discussed below.

Without prior approval or a waiver from the DARPA Director, in accordance with FAR 9.503, a contractor cannot simultaneously provide scientific, engineering, technical assistance (SETA) or similar support and also be a technical performer. As part of the proposal submission, all members of the proposed team (prime proposers, proposed subawardees, and consultants) must affirm whether they (their organizations and individual team members) are providing SETA or similar support to any DARPA technical office(s) through an active contract or subcontract. All affirmations must state which office(s) the proposer, subawardees, consultant, or individual supports and identify the prime contract number(s). All facts relevant to the existence or potential existence of organizational conflicts of interest (FAR 9.5) must be disclosed. The disclosure must include a description of the action the proposer has taken or proposes to take to

avoid, neutralize, or mitigate such conflict. If in the sole opinion of the Government after full consideration of the circumstances, a proposal fails to fully disclose potential conflicts of interest and/or any identified conflict situation cannot be effectively mitigated, the proposal will be rejected without technical evaluation and withdrawn from further consideration for award.

If a prospective proposer believes a conflict of interest exists or may exist (whether organizational or otherwise) or has questions on what constitutes a conflict of interest, the proposer should send his/her contact information and a summary of the potential conflict via email to the BAA email address before time and effort are expended in preparing a proposal and mitigation plan.

C. Cost Sharing/Matching

Cost sharing is not required; however, it will be carefully considered where there is an applicable statutory condition relating to the selected funding instrument (e.g., for any Other Transactions under the authority of 10 U.S.C. § 2371). Cost sharing is encouraged where there is a reasonable probability of a potential commercial application related to the proposed research and development effort.

D. Other Eligibility Criteria

1. Collaborative Efforts

Collaborative efforts/teaming are encouraged.

IV. Application and Submission Information

A. Address to Request Application Package

This solicitation contains all information required to submit a proposal. No additional forms, kits, or other materials are needed. This notice constitutes the total BAA solicitation. No additional information is available, except as provided at FBO.gov, nor will a formal Request for Proposal (RFP) or additional solicitation regarding this announcement be issued. Requests for the same will be disregarded.

B. Content and Form of Application Submission

DARPA policy is to treat all submissions as source selection information (see FAR 2.101 and 3.104), and to disclose their contents only for the purpose of evaluation. Restrictive notices notwithstanding, during the evaluation process, submissions may be handled by support contractors for administrative purposes and/or to assist with technical evaluation. All DARPA support contractors performing this role are expressly prohibited from performing DARPA-sponsored technical research and are bound by appropriate nondisclosure agreements.

Submissions will not be returned. The original of each submission received will be retained at DARPA and all other non-required copies destroyed. A certification of destruction may be

requested, provided the formal request is received at this office within 5 days after notification that a proposal was not selected.

1. Security Information

DARPA anticipates that submissions received under this BAA will be unclassified. However, should a proposer wish to submit classified information, an *unclassified* email must be sent to the BAA mailbox requesting submission instructions from the Technical Office PSO.

Classified submissions shall be transmitted in accordance with the following guidance. Additional information on the subjects discussed in this section may be found at http://www.dss.mil/.

If a submission contains Classified National Security Information as defined by Executive Order 13526, the information must be appropriately and conspicuously marked with the proposed classification level and declassification date. Similarly, when the classification of a submission is in question, the submission must be appropriately and conspicuously marked with the proposed classification level and declassification date. Submissions requiring DARPA to make a final classification determination shall be marked as follows:

> "CLASSIFICATION DETERMINATION PENDING. Protect as though classified_____ (insert the recommended classification level, e.g., Top Secret, Secret or Confidential)."

NOTE: Classified submissions must indicate the classification level of not only the submitted materials, but also the classification level of the anticipated award.

Proposers submitting classified information must have, or be able to obtain prior to contract award, cognizant security agency approved facilities, information systems, and appropriately cleared/eligible personnel to perform at the classification level proposed. All proposer personnel performing Information Assurance (IA)/Cybersecurity related duties on classified Information Systems shall meet the requirements set forth in DoD Manual 8570.01-M (Information Assurance Workforce Improvement Program).

Proposers choosing to submit classified information from other collateral classified sources (i.e., sources other than DARPA) must ensure (1) they have permission from an authorized individual at the cognizant Government agency (e.g., Contracting Officer, Program Manager); (2) the proposal is marked in accordance with the source Security Classification Guide (SCG) from which the material is derived; and (3) the source SCG is submitted along with the proposal.

Security classification guidance and direction via a Security Classification Guide (SCG) and/or DD Form 254, "DoD Contract Security Classification Specification," will not be provided at this time, since DARPA is soliciting ideas only. If a determination is made that the award instrument may result in access to classified information, a SCG and/or DD Form 254 will be issued by DARPA and attached as part of the award.

Confidential and Secret Information
Use transmission, classification, handling, and marking guidance provided by previously issued SCGs, the DoD Information Security Manual (DoDM 5200.01, Volumes 1 - 4), and the National Industrial Security Program Operating Manual, including the Supplement Revision 1, (DoD 5220.22-M and DoD 5200.22-M Sup. 1) when submitting Confidential and/or Secret classified information.

Confidential and Secret classified information may be submitted via ONE of the two following methods:

- Hand-carried by an appropriately cleared and authorized courier to the DARPA CDR. Prior to traveling, the courier shall contact the DARPA Classified Document Registry (CDR) at 703-526-4052 to coordinate arrival and delivery.

  OR

- Mailed via U.S. Postal Service (USPS) Registered Mail or USPS Express Mail. All classified information will be enclosed in opaque inner and outer covers and double-wrapped. The inner envelope shall be sealed and plainly marked with the assigned classification and addresses of both sender and addressee.

  The inner envelope shall be addressed to:

  Defense Advanced Research Projects Agency
  ATTN: Program Security Officer, Microsystems Technology Office
  Reference: DARPA-BAA-16-03
  675 North Randolph Street
  Arlington, VA 22203-2114

  The outer envelope shall be sealed with no identification as to the classification of its contents and addressed to:

  Defense Advanced Research Projects Agency
  Security & Intelligence Directorate, Attn: CDR
  675 North Randolph Street
  Arlington, VA 22203-2114

Top Secret Information
Use classification, handling, and marking guidance provided by previously issued SCGs, the DoD Information Security Manual (DoDM 5200.01, Volumes 1 - 4), and the National Industrial Security Program Operating Manual, including the Supplement Revision 1, (DoD 5220.22-M and DoD 5200.22-M Sup. 1). Top Secret information must be hand-carried by an appropriately cleared and authorized courier to the DARPA CDR. Prior to traveling, the courier shall contact the DARPA CDR at 703-526-4052 to coordinate arrival and delivery.

Sensitive Compartmented Information (SCI)

SCI must be marked, managed and transmitted in accordance with DoDM 5105.21 Volumes 1 - 3. Questions regarding the transmission of SCI may be sent to the DARPA Technical Office PSO via the BAA mailbox or by contacting the DARPA Special Security Officer (SSO) at 703-812-1970.

Successful proposers may be sponsored by DARPA for access to SCI. Sponsorship must be aligned to an existing DD Form 254 where SCI has been authorized. Questions regarding SCI sponsorship should be directed to the DARPA Personnel Security Office at 703-526-4543.

Special Access Program (SAP) Information
SAP information must be marked in accordance with DoDM 5205.07 Volume 4 and transmitted by specifically approved methods which will be provided by the Technical Office PSO or their staff.

Proposers choosing to submit SAP information from an agency other than DARPA are required to provide the DARPA Technical Office Program Security Officer (PSO) written permission from the source material's cognizant Special Access Program Control Officer (SAPCO) or designated representative. For clarification regarding this process, contact the DARPA Technical Office PSO via the BAA mailbox or the DARPA SAPCO at 703-526-4102.

Additional SAP security requirements regarding facility accreditations, information security, personnel security, physical security, operations security, test security, classified transportation plans, and program protection planning may be specified in the DD Form 254.

NOTE: prior to drafting the submission, if use of SAP Information Systems is to be proposed, proposers must first obtain an Authorization-to-Operate from the DARPA Technical Office PSO (or other applicable DARPA Authorization Official) using the Risk Management Framework (RMF) process outlined in the Joint Special Access Program (SAP) Implementation Guide (JSIG), Revision 3, dated October 9, 2013 (or successor document).

2. Proprietary Information

Proposers are responsible for clearly identifying proprietary information. Submissions containing proprietary information must have the cover page and each page containing such information clearly marked with a label such as "Proprietary" or "Company Proprietary." Note, "Confidential" is a classification marking used to control the dissemination of U.S. Government National Security Information as dictated in Executive Order 13526 and should not be used to identify proprietary business information.

3. Proposal Submission Information

The typical proposal should express a consolidated effort in support of one or more related technical concepts or ideas. Disjointed efforts should not be included into a single proposal.

Proposals may not be submitted by fax or e-mail; any so sent will be disregarded.

All administrative correspondence and questions on this solicitation, including requests for information on how to submit a full proposal to this BAA should be directed to DARPA-BAA-16-03@darpa.mil. DARPA intends to use electronic mail for correspondence regarding DARPA-BAA-16-03. DARPA encourages use of the Internet for retrieving the BAA and any other related information that may subsequently be provided.

For Proposers Requesting Contracts or Other Transaction Agreements

Proposers requesting contracts or other transaction agreements must submit proposals via DARPA's BAA Website (https://baa.darpa.mil). Note: If an account has already been created for the DARPA BAA Website, this account may be reused. If no account currently exists for the DARPA BAA Website, visit the website to complete the two-step registration process. Submitters will need to register for an Extranet account (via the form at the URL listed above) and wait for two separate e-mails containing a username and temporary password. After accessing the Extranet, submitters may then create an account for the DARPA BAA website (via the "Register your Organization" link along the left side of the homepage), view submission instructions, and upload/finalize the proposal. Proposers using the DARPA BAA Website may encounter heavy traffic on the submission deadline date; it is highly advised that submission process be started as early as possible.

Classified submissions should NOT be submitted through DARPA's BAA Website (https://baa.darpa.mil), though proposers will likely still need to visit https://baa.darpa.mil to register their organization (or verify an existing registration) to ensure the BAA office can verify and finalize their submission.

All unclassified full proposals submitted electronically through the DARPA BAA website must be uploaded as zip files (.zip or .zipx extension). The final zip file should not exceed 50 MB in size. Only one zip file will be accepted per submission and submissions not uploaded as zip files will be rejected by DARPA.

Technical support for DARPA's BAA Website may be reached at action@darpa.mil, and is typically available during regular business hours (9:00 AM - 5:00 PM EST, Monday - Friday).

NOTE: YOU MUST CLICK THE ‘FINALIZE FULL PROPOSAL’ BUTTON AT THE BOTTOM OF THE CREATE FULL PROPOSAL PAGE. FAILURE TO DO SO WILL RESULT IN YOUR PROPOSAL NOT BEING OFFICIALLY SUBMITTED TO THIS BAA AND THEREFORE NOT BEING REVIEWED.

For a proposal that includes both classified and unclassified information, the proposal may be separated into an unclassified portion and a classified portion. The proposal should use the unclassified portion to the maximum extent reasonable. The unclassified portion can be submitted through the DARPA BAA Website, per the instructions above. The classified portion must be mailed separately, according to the instructions outlined in the “Security Information” section above. If a classified proposal may not be partitioned into classified and unclassified portions, then submit according to the instructions outlined in the “Security Information” section above.

When a proposal includes a classified portion, and when able according to security guidelines, we ask that proposers send an e-mail to DARPA-BAA-16-03@darpa.mil as notification that there is a classified portion to the proposal. When sending the classified portion via mail according to the instructions outlined in the "Security Information" section above, proposers should submit six (6) hard copies of the classified portion of their proposal and two (2) CD-ROMs containing the classified portion of the proposal as a single searchable Adobe PDF file.

Please ensure that all CDs are well-marked. Each copy of the classified portion must be clearly labeled with DARPA-BAA-16-03, proposer organization, proposal title (short title recommended), and Copy _ of _.

4. Full Proposal Format

All full proposals must be in the format given below. Nonconforming proposals may be rejected without review. Proposals shall consist of two volumes: Volume I – Technical and Management Proposal, and Volume II – Cost Proposal. All pages shall be printed on 8-1/2 by 11 inch paper with type not smaller than 12 point. Smaller font may be used for figures, tables and charts. The page limitation for full proposals includes all figures, tables, and charts. Volume I, Technical and Management Proposal, may include an attached bibliography of relevant technical papers or research notes (published and unpublished) which document the technical ideas and approach upon which the proposal is based. Copies of not more than three (3) relevant papers may be included with the submission. The bibliography and attached papers are not included in the page counts given below. The submission of other supporting materials along with the proposals is strongly discouraged and will not be considered for review. Section II of Volume I, Technical and Management Proposal, shall not exceed 32 pages. All full proposals must be written in English.

a. Volume I, Technical and Management Proposal

<u>Section I. Administrative</u>

A. Cover sheet to include:

(1) BAA number (DARPA-BAA-16-03);
(2) Lead Organization submitting proposal;
(3) Type of organization, selected among the following categories: "LARGE ORGANIZATION", "SMALL DISADVANTAGED ORGANIZATION", "OTHER SMALL ORGANIZATION", "HBCU", "MI", "OTHER EDUCATIONAL", OR "OTHER NONPROFIT";
(4) Proposer's reference number (if any);
(5) Other team members (if applicable) and type of organization for each;
(6) Proposal title;
(7) Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail;
(8) Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail;

(9) Total funds requested from DARPA, and the amount of cost share (if any); AND
(10) Date proposal was submitted.

B. Official transmittal letter.

Section II. Detailed Proposal Information

The complete technical proposal (Sections A-H) should not exceed 32 pages total. Maximum page numbers are defined for all sections, except the Technical Approach (Section C) and the Statement of Work (Section D). The bibliography and references are excluded from the total page count.

A. Executive Summary
A one-page executive summary outlining the proposed effort. The executive summary must contain:
1. A high-level overview of the proposed work;
2. Metrics used to define success;
3. Milestones (both DARPA-mandated and proposed-defined);
4. Operational scenarios relevant to the proposed approach; AND
5. The cost of each phase.

B. Teaming Plan
Detailed information about how teams will be formed and managed in order to execute the program plan. This section should be no more than 1 page long. Formal teaming agreements can be included as a "Teaming Appendix" and will not count against the total number pages for this section.

C. Technical Approach
A detailed description of the technical approach, technical rationale, and constructive plan for accomplishment of technical goals in support of the innovative claims and deliverables. This section is the centerpiece of the proposal and should succinctly describe the benefits of the proposed approach. Proposers must include adequate detail and justification for any performer defined metrics and goals. In addition, a detailed analysis of how the proposed approach will meet both the DARPA and performer defined metrics must be provided. Technical aspects to detail in this section include aerodynamic structural design, control design, materials design, and the size and nature of any anticipated remnants. Control algorithms and avionics packages should be supported by theoretical and/or numerical simulations. Vehicle designs should include quantitative rationale for the decisions, including a description of the electronics likely to be integrated in the avionics package along with a plan for acquiring these electronics (whether they are COTS or proprietary). Clarify the limitations of state-of-the-art COTS components and include a plan for technology transfer and other issues affecting Government-use of non-COTS components in the proposed design. A description of the transient materials intended for the final transient vehicle, the current transience and structural characteristics of these materials (*e.g.*, Young's modulus, ultimate tensile strength, shear strength, *etc.*), and the transience and general materials engineering required to achieve the final required properties should be included. Include details about the non-transient proxy materials planned for the

Phase I non-transient prototype and the structural, chemical, and other relevant justifications for their selection, including their potential usability in the desired fabrication process. Include a narrative regarding the transient materials scale-up path and subsequent prototype fabrication process. If applicable, include a description of the short-loop experiments planned to demonstrate feasibility of the planned manufacturing approaches.

Include along with the technical approach a thorough analysis of the anticipated technical challenges and risks (technical and programmatic). In addition, provide a detailed risk mitigation strategy. The risk plan should include a metric showing the probability of the risk occurring and another metric to capture the impact to the program. The impact of risks should be tied to the overall program objectives.

Finally, provide a detailed description of the complete deployment scenarios from the shelf-life and storage, to launch conditions, to the payload delivery and finally to the transience.

D. Statement of Work

In plain English, clearly define the technical tasks/subtasks to be performed, their durations, dependencies among them, and the associated deliverables. The page length for the SOW will be dependent on the amount of the effort. The SOW must not include proprietary information. For each task/subtask, provide:

1. A general description of the objective (for each defined task/activity);
2. A detailed description of the approach to be taken to accomplish each defined task/activity;
3. Identification of the primary organization responsible for task execution (prime, sub, team member, by name, *etc*.);
4. The completion criteria for each task/activity - a product, event or milestone that defines its completion.
5. Define all deliverables (data, reports, hardware, *etc*.) to be provided to the Government in support of the proposed research tasks/activities.

Note: Each Phase of the program must be separately defined in the SOW.

E. Schedule and Measureable Milestones

Schedule and measurable milestones for the proposed research. Measurable milestones should capture key development points in tasks and should be clearly articulated and defined in time relative to start of effort. Additionally, proposals should clearly explain the technical approach(es) that will be employed to meet or exceed program metrics detailed in this solicitation and provide ample justification as to why the approach(es) is/are feasible. The milestones must not include proprietary information. This section should be no more than 3 pages long.

F. Previous Accomplishments

Discussion of the proposer's previous accomplishments and work in closely related research areas. This section should be no more than 2 pages long.

G. Facilities

Description of the critical facilities and capabilities necessary for successful execution of the proposed effort. This section should be no more than 2 pages long.

H. Technology Transfer
Description of the results, products, transferable technology, and expected technology transfer path. The proposed path should detail the plans and capability to accomplish technology transition and commercialization. This section should also describe the capability to accomplish technology transition both independent of and in conjunction with the DoD/DARPA. Identify potential manufacturing avenues and include a cost analysis of the materials, technology, and manufacturing considerations likely to determine the final vehicle cost when commercialized. Include in this section all proprietary claims to the results, prototypes, intellectual property, or systems supporting and/or necessary for the use of the research, results, and/or prototype. If there are no proprietary claims, this should be stated. For forms to be completed regarding intellectual property, see Section VIII. There will be no page limit for the listed forms. This section should be no more than 2 pages long.

I. Summary Slide
Maximum of two PowerPoint (or equivalent) slide(s) summarizing the proposed effort. A template PowerPoint slide shall be provided on FBO.gov as an attachment. Submit the PowerPoint (or equivalent) file in addition to Volume I and Volume II of your full proposal. This summary slide does not count towards the total page count.

Section III. Additional Information

A brief bibliography of relevant technical papers and research notes (published and unpublished) which document the technical ideas upon which the proposal is based. Copies of not more than three (3) relevant papers may be included in the submission.

b. Volume II, Cost Proposal – {No Page Limit}

It is strongly recommended that proposers use the editable MS Excel spreadsheet in Attachment 3 of this solicitation to support their Cost Proposal.

All proposers, including FFRDCs, must submit the following:

Cover sheet to include:
(1) BAA number (DARPA-BAA-16-03);
(2) Lead Organization submitting proposal;
(3) Type of organization, selected among the following categories: “LARGE ORGANIZATION”, “SMALL DISADVANTAGED ORGANIZATION”, “OTHER SMALL ORGANIZATION”, “HBCU”, “MI”, “OTHER EDUCATIONAL”, OR “OTHER NONPROFIT”;
(4) Proposer’s reference number (if any);
(5) Other team members (if applicable) and type of organization for each;
(6) Proposal title;

(7) Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail (if available);
(8) Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), and electronic mail (if available);
(9) Award instrument requested: cost-plus-fixed fee (CPFF), cost-contract—no fee, cost sharing contract – no fee, or other type of procurement contract (*specify*), other transaction;
(10) Place(s) and period(s) of performance;
(11) Total proposed cost separated by basic award and option(s) (if any) broken down by calendar year and by government fiscal year;
(12) Name, address, and telephone number of the proposer's cognizant Defense Contract Management Agency (DCMA) administration office (*if known)*;
(13) Name, address, and telephone number of the proposer's cognizant Defense Contract Audit Agency (DCAA) audit office (*if known*);
(14) Date proposal was prepared;
(15) DUNS number;
(16) TIN number;
(17) CAGE Code;
(18) Subcontractor Information;
(19) Proposal validity period; AND
(20) Any Forward Pricing Rate Agreement, other such approved rate information, or such documentation that may assist in expediting negotiations (if available).

Attachment 1, the Cost Volume Proposer Checklist, must be included with the coversheet of the Cost Proposal.

Proposers, other than universities, without an accounting system considered adequate for determining accurate costs must complete an SF 1408 if a cost type contract is to be negotiated. To facilitate this process, proposers should complete the SF 1408 found at http://www.gsa.gov/portal/forms/download/115778 and submit the completed form with the proposal. To complete the form, check the boxes on the second page, then provide a narrative explanation of your accounting system to supplement the checklist on page one. For more information, please see http://www.dcaa.mil/preaward_accounting_system_adequacy_checklist.html.

The proposers,' to include eligible FFRDCs', cost volume shall provide cost and pricing information (See Note 1), or other than cost or pricing information if the total price is under $750,000, in sufficient detail to substantiate the program price proposed (e.g., realism and reasonableness). In doing so, the proposer shall provide a summary cost breakdown, and a detailed cost breakdown by phase (if multiple phases are proposed), technical task/sub-task, and month for each technical area proposed to (Government fiscal year and calendar year). The breakdown/s shall include, at a minimum, the following major cost item along with associated backup documentation:

Total program cost broken down by major cost items:

a. Direct Labor – a breakout clearly identifying the individual labor categories with associated labor hours and direct labor rates, as well as a detailed Basis-of-Estimate (BOE) narrative description of the methods used to estimate labor costs;
b. Indirect Costs – Including Fringe Benefits, Overhead, General and Administrative Expense, Cost of Money, Fee, etc. (must show base amount and rate);
c. Travel – Provide the purpose of the trip, number of trips, number of days per trip, departure and arrival destinations, number of people, etc.;
d. Other Direct Costs – Itemized with costs; Back-up documentation is to be submitted to support proposed costs;
e. Material/Equipment –
(i) A priced Bill-of-Material (BOM) clearly identifying, for each item proposed, the quantity, unit price, the source of the unit price (i.e., vendor quote, engineering estimate, etc.), the type of property (i.e., material, equipment, special test equipment, information technology, etc.), and a cross-reference to the Statement of Work (SOW) task/s that require the item/s. At time of proposal submission, any item that exceeds $1,000 must be supported with basis-of-estimate (BOE) documentation such as a copy of catalog price lists, vendor quotes or a written engineering estimate (additional documentation may be required during negotiations, if selected).
(ii) <u>If seeking a procurement contract and items of Contractor Acquired Property are proposed, exclusive of material, the proposer shall clearly demonstrate that the inclusion of such items as Government Property is in keeping with the requirements of FAR Part 45.102.</u> In accordance with FAR 35.014, "Government property and title," it is the Government's intent that title to all equipment purchased with funds available for research under any resulting contract will vest in the acquiring nonprofit institution (e.g., Nonprofit Institutions of Higher Education and Nonprofit Organizations whose primary purpose is the conduct of scientific research) upon acquisition without further obligation to the Government. Any such equipment shall be used for the conduct of basic and applied scientific research. The above transfer of title to all equipment purchased with funds available for research under any resulting contract is not allowable when the acquiring entity is a for-profit organization; however, such organizations can, in accordance with FAR 52.245-1(j), be given priority to acquire such property at its full acquisition cost.
f. Consultants – If consultants are to be used, proposer must provide a copy of the consultant's proposed SOW as well as a signed consultant agreement or other document which verifies the proposed loaded daily / hourly rate and any other proposed consultant costs (e.g. travel);
g. Subcontracts – Itemization of all subcontracts. **Additionally, the prime contractor is responsible for compiling and providing, as part of its proposal submission to the Government, subcontractor proposals prepared at the same level of detail as that required by the prime.** Subcontractor proposals include Interdivisional Work Transfer Agreements (ITWA) or similar arrangements. <u>If seeking a procurement contract, the prime contractor shall provide a cost reasonableness analysis of all proposed subcontractor costs/prices.</u> Such analysis shall indicate the extent to which the prime contractor has

negotiated subcontract costs/prices and whether any such subcontracts are to be placed on a sole-source basis. All proprietary subcontractor proposal documentation which cannot be uploaded to BAAT as part of the proposer's submission shall be made immediately available to the Government, upon request, under separate cover (i.e., mail, electronic/email, etc.), either by the proposer or by the subcontractor organization – this does not relieve the proposer from the requirement to include, as part of their submission (via BAA or Hardcopy, as applicable), subcontract proposals that do not include proprietary pricing information (rates, factors, etc.). A Rough Order of Magnitude (ROM), or similar budgetary estimate, is not considered a fully qualified subcontract cost proposal submission. Inclusion of a ROM, or similar budgetary estimate, may result in the full proposal being deemed non-compliant or evaluation ratings may be lowered;

h. The source, nature, and amount of any industry cost-sharing;
i. Written justification required per Part II, "Award Information," pertaining to prime and/or subcontracted effort being considered Contracted Fundamental Research; AND
j. Small Business Subcontracting Plan, if applicable. See Section VI(B)(5) "Subcontracting" below.

Proposers are required to provide the aforementioned cost breakdown as an editable MS Excel spreadsheet, inclusive of calculations formulae, with tabs (material, travel, ODC's) provided as necessary. The Government also requests and recommends that the Cost Proposal include MS Excel file(s) that provide traceability between the Bases of Estimate (BOEs) and the proposed costs across all elements and phases. This includes the calculations and adjustments that are utilized to generate the Summary Costs from the source labor hours, labor costs, material costs, etc. input data. It is requested that the costs and Subcontractor proposals be readily traceable to the Prime Cost Proposal in the provided MS Excel file(s) – although this is not a requirement, providing information in this manner will assist the Government in understanding what is being proposed both technically and in terms of cost realism.

It is strongly recommended that proposers use the editable MS Excel spreadsheet in Attachment 3 of this solicitation to support their Cost Proposal.

Where the effort consists of multiple portions which could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates. For IT and equipment purchases, include a letter stating why the proposer cannot provide the requested resources from its own funding.

The cost proposal should include identification of pricing assumptions of which may require incorporation into the resulting award instrument (i.e., use of Government Furnished Property/Facilities/Information, access to Government Subject Matter Experts, etc.).

Supporting cost and pricing information in sufficient detail to substantiate the summary cost estimates in B. above. Include a description of the method used to estimate costs and supporting documentation.

Cost proposals submitted by FFRDC's (prime or subcontractor) will be forwarded, if selected for negotiation, to their sponsoring organization contracting officer for review to confirm that all required forward pricing rates and factors have been used.

Note 1:
(a) "Cost or Pricing Data" as defined in FAR Subpart 15.4 shall be required if the proposer is seeking a procurement contract award of $700,000 or greater unless the proposer requests an exception from the requirement to submit cost or pricing data. Per DFARS 215.408(5), DFARS 252.215-7009, Proposal Adequacy Checklist, applies to all proposers/proposals seeking a FAR-based award (contract).
(b) In accordance with DFARS 15.403-1(4)(D), DoD has waived cost or pricing data requirements for nonprofit organizations (including educational institutions) on cost-reimbursement-no-fee contracts. In such instances where the waiver stipulated at DFARs 15.403-1(4)(D) applies, proposers shall submit information other than cost or pricing data to the extent necessary for the Government to determine price reasonableness and cost realism; and cost or pricing data from subcontractors that are not nonprofit organizations when the subcontractor's proposal exceeds the cost and pricing data threshold at FAR 15.403-4(a)(1).
(c) "Cost or pricing data" are not required if the proposer proposes an award instrument other than a procurement contract (i.e., cooperative agreement, grant, or other transaction agreement).

PLEASE NOTE, PROPOSERS ARE CAUTIONED THAT EVALUATION RATINGS MAY BE LOWERED AND/OR PROPOSALS REJECTED IF PROPOSAL PREPARATION (PROPOSAL FORMAT, CONTENT, ETC.) AND/OR SUBMITTAL INSTRUCTIONS ARE NOT FOLLOWED.

5. Submission Dates and Times

a. Full Proposal Date

The full proposal must be submitted to DARPA/MTO on or before 4:00 PM, Eastern Time, 2 December 2015, in order to be considered during the single round of selections. Proposals received after this deadline will not be reviewed.

DARPA will post on a regular basis a consolidated Question and Answer (FAQ) document. To access the posting go to: http://www.darpa.mil/work-with-us/opportunities. Under the DARPA-BAA-16-03 summary will be a link to the FAQ. Submit your question/s by E-mail to DARPA-BAA-16-03@darpa.mil. In order to receive a response sufficiently in advance of the proposal due date, send your question/s on or before 4:00 PM, Eastern Time, 9 November 2015.

DARPA will acknowledge receipt of complete submissions via email and assign control numbers that should be used in all further correspondence regarding proposals.

6. Funding Restrictions

Not applicable.

7. Other Submission Requirements

Not applicable.

V. Application Review Information

A. Evaluation Criteria

Proposals will be evaluated using the following criteria, listed in descending order of importance: (a) Overall Scientific and Technical Merit; (b) Potential Contribution and Relevance to the DARPA Mission; (c) Cost and Schedule Realism; and (d) Plans and Capability to Accomplish Technology Transition.

(a) Overall Scientific and Technical Merit

The proposed technical approach is feasible, achievable, complete and supported by a proposed technical team that has the expertise and experience to accomplish the proposed tasks.

Task descriptions, milestones, and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly defined such that a final outcome that achieves the program goals can be expected as a result of award. The timeline for achieving major milestones is aggressive, but rationally supported with a clear description of the requirements and risks. The proposal identifies major technical risks and planned mitigation efforts are clearly defined and feasible.

(b) Potential Contribution and Relevance to the DARPA Mission

The potential contributions of the proposed effort are relevant to the national technology base. Specifically, DARPA's mission is to maintain the technological superiority of the U.S. military and prevent technological surprise from harming our national security by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their application.

(c) Cost and Schedule Realism

The proposed costs are realistic for the technical and management approach and accurately reflect the technical goals and objectives of the solicitation. The proposed costs are consistent with the proposer's Statement of Work and reflect a sufficient understanding of the costs and level of effort needed to successfully accomplish the proposed technical approach. The costs for the prime proposer and proposed subawardees are substantiated by the details provided in the proposal (e.g., the type and number of labor hours proposed per task, the types and quantities of materials, equipment and fabrication costs, travel and any other applicable costs).

It is expected that the effort will leverage all available relevant prior research in order to obtain the maximum benefit from the available funding. For efforts with a likelihood of commercial application, appropriate direct cost sharing may be a positive factor in the evaluation. DARPA recognizes that undue emphasis on cost may motivate proposers to offer low-risk ideas with minimum uncertainty and to staff the effort with junior personnel in order to be in a more competitive posture. DARPA discourages such cost strategies.

The proposed schedule aggressively pursues performance metrics in the shortest timeframe and accurately accounts for that timeframe. The proposed schedule identifies and mitigates any potential schedule risk.

(d) Plans and Capability to Accomplish Technology Transition

The proposer clearly demonstrates its capability to transition the technology to the research, industrial, and/or operational military communities in such a way as to enhance U.S. defense. In addition, the evaluation will take into consideration the extent to which the proposed intellectual property (IP) rights will potentially impact the Government's ability to transition the technology.

B. Review and Selection Process

DARPA will conduct a scientific/technical review of each conforming proposal. Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement. DARPA's intent is to review proposals as soon as possible after they arrive; however, proposals may be reviewed periodically for administrative reasons.

Award(s) will be made to proposers whose proposals are determined to be the most advantageous to the Government, all factors considered, including the potential contributions of the proposed work to the overall research program and the availability of funding for the effort.

It is the policy of DARPA to ensure impartial, equitable, comprehensive proposal evaluations and to select the source (or sources) whose offer meets the Government's technical, policy, and programmatic goals. Pursuant to FAR 35.016, the primary basis for selecting proposals for acceptance shall be technical, importance to agency programs, and fund availability. In order to provide the desired evaluation, qualified Government personnel will conduct reviews and (if necessary) convene panels of experts in the appropriate areas.

For evaluation purposes, a proposal is the document described in "Full Proposal Format," Section IV.B.4. Other supporting or background materials submitted with the proposal will be considered for the reviewer's convenience only and not considered as part of the proposal.

Restrictive notices notwithstanding, support contractors may handle proposals for administrative purposes. These support contractors are prohibited from competition in DARPA technical research and are bound by appropriate non-disclosure requirements.

Subject to the restrictions set forth in FAR 37.203(d), input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants/experts who are strictly bound by the appropriate non-disclosure requirements.

VI. Award Administration Information

A. Selection Notices

As soon as the evaluation of a proposal is complete, the proposer will be notified that (1) the proposal has been selected for funding pending contract negotiations, or (2) the proposal has not

been selected. These official notifications will be sent via email to the Technical POC identified on the proposal coversheet.

B. Administrative and National Policy Requirements

1. Meeting and Travel Requirements

All key participants are required to attend the program kickoff meeting. Performers should also anticipate regular program-wide PI Meetings and periodic site visits at the Program Manager's discretion.

2. Human Subjects Research

All research selected for funding involving human subjects, to include use of human biological specimens and human data, must comply with the federal regulations for human subjects protection. Further, research involving human subjects that is conducted or supported by the DoD must comply with 32 CFR 219, Protection of Human Subjects (and DoD Instruction 3216.02, Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research (http://www.dtic.mil/whs/directives/corres/pdf/321602p.pdf).

Institutions awarded funding for research involving human subjects must provide documentation of a current Assurance of Compliance with Federal regulations for human subjects protection, such as a Department of Health and Human Services, Office of Human Research Protection Federal Wide Assurance (http://www.hhs.gov/ohrp). All institutions engaged in human subjects research, to include subawardees, must also hold a valid Assurance. In addition, all personnel involved in human subjects research must provide documentation of completion of human subjects research training.

For all proposed research that will involve human subjects in the first year or phase of the project, the institution must provide evidence of or a plan for review by an Institutional Review Board (IRB) upon final proposal submission to DARPA as part of their proposal, prior to being selected for funding. The IRB conducting the review must be the IRB identified on the institution's Assurance of Compliance with human subjects protection regulations. The protocol, separate from the proposal, must include a detailed description of the research plan, study population, risks and benefits of study participation, recruitment and consent process, data collection, and data analysis. It is recommended that you consult the designated IRB for guidance on writing the protocol. The informed consent document must comply with federal regulations (32 CFR 219.116). A valid Assurance of Compliance with human subjects protection regulations along with evidence of completion of appropriate human subjects research training by all investigators and personnel involved with human subjects research should accompany the protocol for review by the IRB.

In addition to a local IRB approval, a headquarters-level human subjects administrative review and approval is required for all research conducted or supported by the DoD. The Army, Navy, or Air Force office responsible for managing the award can provide guidance and information about their component's headquarters-level review process. Note that confirmation of a current

Assurance of Compliance with human subjects protection regulations and appropriate human subjects research training is required before headquarters-level approval can be issued.

The time required to complete the IRB review/approval process varies depending on the complexity of the research and the level of risk involved with the study. The IRB approval process can last between one and three months, followed by a DoD review that could last between three and six months. Ample time should be allotted to complete the approval process. DoD/DARPA funding cannot be used towards human subjects research until ALL approvals are granted.

3. Animal Use

Award recipients performing research, experimentation, or testing involving the use of animals shall comply with the rules on animal acquisition, transport, care, handling, and use as outlined in: (i) 9 CFR parts 1-4, Department of Agriculture rules that implement the Animal Welfare Act of 1966, as amended, (7 U.S.C. § 2131-2159); (ii) National Institutes of Health Publication No. 86-23, "Guide for the Care and Use of Laboratory Animals" (8th Edition); and (iii) DoD Instruction 3216.01, "Use of Animals in DoD Programs."

For projects anticipating animal use, proposals should briefly describe plans for Institutional Animal Care and Use Committee (IACUC) review and approval. Animal studies in the program will be expected to comply with the Public Health Service (PHS) Policy on Humane Care and Use of Laboratory Animals, available at http://grants.nih.gov/grants/olaw/olaw.htm.

All award recipients must receive approval by a DoD-certified veterinarian, in addition to an IACUC approval. No animal studies may be conducted using DoD/DARPA funding until the United States Army Medical Research and Materiel Command (USAMRMC) Animal Care and Use Review Office (ACURO) or other appropriate DoD veterinary office(s) grant approval. As a part of this secondary review process, the award recipient will be required to complete and submit an ACURO Animal Use Appendix, which may be found at https://mrmc-www.army.mil/index.cfm?pageid=Research_Protections.acuro&rn=1.

4. Export Control

Per DFARS 225.7901-4, all procurement contracts, other transactions and other awards, as deemed appropriate, resultant from this solicitation will include the DFARS Export Control clause (252.225-7048).

5. Subcontracting

Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. § 637(d)), it is the policy of the Government to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to contractors performing work or rendering services as prime contractors or subcontractors under Government contracts, and to assure that prime contractors and subcontractors carry out this policy. Each proposer who submits a contract proposal and includes subcontractors is required to submit a subcontracting plan in accordance with FAR 19.702(a)(1) should do so with their proposal. The plan format is outlined in FAR 19.704.

6. Electronic and Information Technology

All electronic and information technology acquired through this solicitation must satisfy the accessibility requirements of Section 508 of the Rehabilitation Act (29 U.S.C. § 794d) and FAR 39.2. Each proposer who submits a proposal involving the creation or inclusion of electronic and information technology must ensure that federal employees with disabilities will have access to and use of information that is comparable to the access and use by Federal employees who are not individuals with disabilities and members of the public with disabilities seeking information or services from DARPA will have access to and use of information and data that is comparable to the access and use of information and data by members of the public who are not individuals with disabilities.

7. Employment Eligibility Verification

As per FAR 22.1802, recipients of FAR-based procurement contracts must enroll as federal contractors in E-verify and use the system to verify employment eligibility of all employees assigned to the award. All resultant contracts from this solicitation will include FAR 52.222-54, "Employment Eligibility Verification." This clause will not be included in grants, cooperative agreements, or Other Transactions.

8. System for Award Management (SAM) and Universal Identifier Requirements

Unless the proposer is exempt from this requirement, as per FAR 4.1102 or 2 CFR 25.110 as applicable, all proposers must be registered in the System for Award Management (SAM) and have a valid Data Universal Numbering System (DUNS) number prior to submitting a proposal. All proposers must maintain an active registration in SAM with current information at all times during which they have an active Federal award or proposal under consideration by DARPA. All proposers must provide the DUNS number in each proposal they submit.

Information on SAM registration is available at www.sam.gov.

9. Reporting Executive Compensation and First-Tier Subcontract Awards

FAR clause 52.204-10, "Reporting Executive Compensation and First-Tier Subcontract Awards," will be used in all procurement contracts valued at $25,000 or more. A similar award term will be used in all grants and cooperative agreements.

10. Updates of Information Regarding Responsibility Matters

Per FAR 9.104-7(c), FAR clause 52.209-9, Updates of Publicly Available Information Regarding Responsibility Matters, will be included in all contracts valued at $500,000 or more where the contractor has current active Federal contracts and grants with total value greater than $10,000,000.

11. Representations by Corporations Regarding an Unpaid Delinquent Tax Liability or a Felony Conviction under any Federal Law

The following representation will be included in all awards:

(a) In accordance with sections 744 and 745 of Division E, Title VII, of the Consolidated and Further Continuing Appropriations Act, 2015 (Pub. L. 11-235), none of the funds made available by this or any other Act may be used to enter into a contract with any corporation that —

(1) Has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability, where the awarding agency is aware of the unpaid tax liability, unless the agency has considered suspension or debarment of the corporation and made a determination that this further action is not necessary to protect the interests of the Government; or

(2) Was convicted of a felony criminal violation under any Federal law within the preceding 24 months, where the awarding agency is aware of the conviction, unless the agency has considered suspension or debarment of the corporation and made a determination that this action is not necessary to protect the interests of the Government.

(b) The Offeror represents that –

(1) It is [ ] is not [ ] a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability,

(2) It is [ ] is not [ ] a corporation that was convicted of a felony criminal violation under a Federal law within the preceding 24 months.

12. Cost Accounting Standards (CAS) Notices and Certification

As per FAR 52.230-2, any procurement contract in excess of $700,000 resulting from this solicitation will be subject to the requirements of the Cost Accounting Standards Board (48 CFR 99), except those contracts which are exempt as specified in 48 CFR 9903.201-1. Any proposer submitting a proposal which, if accepted, will result in a CAS compliant contract, must submit representations and a Disclosure Statement as required by 48 CFR 9903.202 detailed in FAR 52.230-2. The disclosure forms may be found at http://www.whitehouse.gov/omb/procurement_casb.

13. Controlled Unclassified Information (CUI) on Non-DoD Information Systems

Controlled Unclassified Information (CUI) refers to unclassified information that does not meet the standards for National Security Classification but is pertinent to

the national interests of the United States or to the important interests of entities outside the Federal Government and under law or policy requires protection from unauthorized disclosure, special handling safeguards, or prescribed limits on exchange or dissemination. All non-DoD entities doing business with DARPA are expected to adhere to the following procedural safeguards, in addition to any other relevant Federal or DoD specific procedures, for submission of any proposals to DARPA and any potential business with DARPA:

- Do not process DARPA CUI on publicly available computers or post DARPA CUI to publicly available webpages or websites that have access limited only by domain or Internet protocol restriction.
- Ensure that all DARPA CUI is protected by a physical or electronic barrier when not under direct individual control of an authorized user and limit the transfer or DARPA CUI to subawardees or teaming partners with a need to know and commitment to this level of protection.
- Ensure that DARPA CUI on mobile computing devices is identified and encrypted and all communications on mobile devices or through wireless connections are protected and encrypted.
- Overwrite media that has been used to process DARPA CUI before external release or disposal.

14. Safeguarding of Unclassified Controlled Technical Information

Per DFARS 204.7303, DFARS 252.204-7012, Safeguarding of Unclassified Controlled Technical Information, applies to this solicitation and all FAR-based awards resulting from this solicitation.

15. Prohibition on Contracting with Entities that Require Certain Internal Confidentiality Agreements

(a) In accordance with section 743 of Division E, Title VII, of the Consolidated and Further Continuing Resolution Appropriations Act, 2015 (Pub. L. 113-235), Government agencies are not permitted to use funds appropriated (or otherwise made available) under that or any other Act for contracts with an entity that requires employees or subcontractors of such entity seeking to report fraud, waste, or abuse to sign internal confidentiality agreements or statements prohibiting or otherwise restricting such employees or contactors from lawfully reporting such waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information.

(b) The prohibition in paragraph (a) of this provision does not contravene requirements applicable to Standard Form 312, Form 4414, or any other form issued by a Federal department or agency governing the nondisclosure of classified information.

(c) *Representation*. By submission of its offer, the Offeror represents that it does not require employees or subcontractors of such entity seeking to report fraud, waste, or abuse to sign or comply with internal confidentiality agreements or statements prohibiting or otherwise restricting such employees or contactors from lawfully reporting such waste, fraud, or abuse to a designated

investigative or law enforcement representative of a Federal department or agency authorized to receive such information.

C. Reporting

The number and types of reports will be specified in the award document, but will include as a minimum quarterly technical and monthly financial status reports. Monthly update teleconferences with the DARPA Program Manager will likely augment the quarterly technical reporting. The reports shall be prepared and submitted in accordance with the procedures contained in the award document and mutually agreed on before award. Reports and briefing material will also be required as appropriate to document progress in accomplishing program metrics. A Final Report that summarizes the project and tasks will be required at the conclusion of the performance period for the award, notwithstanding the fact that the research may be continued under a follow-on vehicle.

D. Electronic Systems

1. Representations and Certifications

In accordance with FAR 4.1201, prospective proposers shall complete electronic annual representations and certifications at www.sam.gov.

2. Wide Area Work Flow (WAWF)

Unless using another means of invoicing, performers will be required to submit invoices for payment directly via to http://wawf.eb.mil. Registration in WAWF will be required prior to any award under this BAA.

3. i-Edison

The award document for each proposal selected for funding will contain a mandatory requirement for patent reports and notifications to be submitted electronically through i-Edison (https://public.era.nih.gov/iedison).

VII. Agency Contacts

Administrative, technical or contractual questions should be sent via e-mail to DARPA-BAA-16-03@darpa.mil. All requests must include the name, email address, and phone number of a point of contact.

The technical POC for this effort is:

Dr. Troy Olsson
DARPA/MTO
ATTN: DARPA-BAA-16-03
675 North Randolph Street
Arlington, VA 22203-2114

VIII. Other Information

A. Intellectual Property Procurement Contract Proposers

1. Noncommercial Items (Technical Data and Computer Software)

Proposers responding to this BAA requesting a procurement contract to be issued under the FAR/DFARS shall identify all noncommercial technical data and noncommercial computer software that it plans to generate, develop, and/or deliver under any proposed award instrument in which the Government will acquire less than unlimited rights, and to assert specific restrictions on those deliverables. Proposers shall follow the format under DFARS 252.227-7017 for this stated purpose. In the event that proposers do not submit the list, the Government will assume that it automatically has "unlimited rights" to all noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, unless it is substantiated that development of the noncommercial technical data and noncommercial computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, then proposers should identify the data and software in question, as subject to Government Purpose Rights (GPR). In accordance with DFARS 252.227-7013 Rights in Technical Data - Noncommercial Items, and DFARS 252.227-7014 Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation, the Government will automatically assume that any such GPR restriction is limited to a period of five (5) years in accordance with the applicable DFARS clauses, at which time the Government will acquire "unlimited rights" unless the parties agree otherwise. Proposers are advised that the Government will use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. If no restrictions are intended, then the proposer should state "NONE." It is noted an assertion of "NONE" indicates that the Government has "unlimited rights" to all noncommercial technical data and noncommercial computer software delivered under the award instrument, in accordance with the DFARS provisions cited above. Failure to provide full information may result in a determination that the proposal is not compliant with the BAA – resulting in nonselectability of the proposal.

A sample list for complying with this request is as follows:

NONCOMMERCIAL				
Technical Data Computer Software To be Furnished With Restrictions	Summary of Intended Use in the Conduct of the Research	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(NARRATIVE)	(LIST)	(LIST)	(LIST)

2. Commercial Items (Technical Data and Computer Software)

Proposers responding to this BAA requesting a procurement contract to be issued under the FAR/DFARS shall identify all commercial technical data and commercial computer software that may be embedded in any noncommercial deliverables contemplated under the research effort, along with any applicable restrictions on the Government's use of such commercial technical data and/or commercial computer software. In the event that proposers do not submit the list, the Government will assume that there are no restrictions on the Government's use of such commercial items. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. If no restrictions are intended, then the proposer should state "NONE." Failure to provide full information may result in a determination that the proposal is not compliant with the BAA – resulting in nonselectability of the proposal.

A sample list for complying with this request is as follows:

COMMERCIAL				
Technical Data Computer Software To be Furnished With Restrictions	Summary of Intended Use in the Conduct of the Research	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(NARRATIVE)	(LIST)	(LIST)	(LIST)

B. Non-Procurement Contract Proposers – Noncommercial and Commercial Items (Technical Data and Computer Software)

Proposers responding to this BAA requesting a Grant, Cooperative Agreement, Technology Investment Agreement, or Other Transaction for Prototype shall follow the applicable rules and regulations governing these various award instruments, but in all cases should appropriately identify any potential restrictions on the Government's use of any Intellectual Property contemplated under those award instruments in question. This includes both Noncommercial Items and Commercial Items. Although not required, proposers may use a format similar to that described in Paragraphs 1.a and 1.b above. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions, and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. If no restrictions are intended, then the proposer should state "NONE." Failure to provide full information may result in a determination that the proposal is not compliant with the BAA – resulting in nonselectability of the proposal.

C. All Proposers – Patents

Include documentation proving your ownership of or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) that will be utilized under your proposal for the DARPA program. If a patent application has been filed for an invention that your proposal utilizes, but the application has not yet been made publicly available and contains proprietary information, you may provide only the patent number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional

application, and a summary of the patent title, together with either: (1) a representation that you own the invention, or (2) proof of possession of appropriate licensing rights in the invention.

D. All Proposers – Intellectual Property Representations

Provide a good faith representation that you either own or possess appropriate licensing rights to all other intellectual property that will be utilized under your proposal for the DARPA program. Additionally, proposers shall provide a short summary for each item asserted with less than unlimited rights that describes the nature of the restriction and the intended use of the intellectual property in the conduct of the proposed research.

E. Other Transactions (OTs):

DARPA is able to obtain its research support through a variety of legal instruments and flexible arrangements, to include use of Other Transaction Agreements (OTAs). OTAs are potentially applicable to a wide variety of DARPA programs. They are likely to be particularly applicable to support dual-use technologies (those with commercial nonmilitary potential as well as potential military applications), consortia or multi-party agreements, and work supported by multiple funding sources. Because OTAs are not traditional procurement contracts, DARPA is not required to include the traditional FAR and DFARS clauses in these agreements, but is free to negotiate provisions that are mutually agreeable to both the Government and the consortium of companies entering into the agreement. Proposals may, but need not, state that an OTA rather than a contract or grant is desired. Furthermore, DARPA does not enter into OTAs when a contract or grant is feasible or appropriate. See FAR 35.003 for Government-wide policy on use of contracts for research and development. Potential proposers are encouraged to visit the DARPA Contracts Management page (http://www.darpa.mil/work-with-us/contract-management) for more information regarding the use of OTAs.

For information on 845 Other Transaction Authority for Prototypes (OTA) agreements, refer to http://www.darpa.mil/work-with-us/contract-management. All proposers requesting an 845 Other Transaction Authority for Prototypes (OTA) agreement must include a detailed list of milestones. Each such milestone must include the following: milestone description, completion criteria, due date, payment/funding schedule (to include, if cost share is proposed, contractor and Government share amounts). It is noted that, at a minimum, such milestones should relate directly to accomplishment of program technical metrics as defined in the BAA and/or the proposer's proposal. Agreement type, fixed price or expenditure based, will be subject to negotiation by the Agreements Officer; however, it is noted that the Government prefers use of fixed price milestones with a payment/funding schedule to the maximum extent possible. Do not include proprietary data. If the proposer requests award of an 845 OTA agreement as a nontraditional defense contractor, as so defined in the OSD guide entitled "Other Transactions (OT) Guide For Prototype Projects" dated January 2001 (as amended) (http://www.acq.osd.mil/dpap/Docs/otguide.doc), information must be included in the cost proposal to support the claim. Additionally, if the proposer plans requests award of an 845 OTA agreement, without the required one-third (1/3) cost share, information must be included in the cost proposal supporting that there is at least one non-traditional defense contractor participating to a significant extent in the proposed prototype project.